

REMARKS

Applicants appreciate the Examiner's careful review of the application as detailed in the Office Action dated August 3, 2010 ("Office Action"). Applicants thank the Examiner for withdrawing the Restriction Requirement in the previous Office Action.

Claim Rejections Under 35 U.S.C. § 112

Applicants have amended claims 53, 91 and 92 to overcome the rejections under 35 U.S.C. § 112 in section 2a of the Office Action. Applicants have amended independent claims 53, 91, and 92 to now read "wherein the fibers have not been previously subjected to adhesion and/or pretreatment steps" instead of "where the said at least one layer (T₁) of splittable multi-component polymer fibers has not been previously subjected to a bonding step." Therefore, the claims no longer contains limitations directed to the fibers having not been previously subjected to a bonding step. Support for the amended claim element that the "fibers have not been previously subjected to adhesion and/or pretreatment steps" can be found at least in paragraphs [0009] and [0074] of the Specification as filed. Therefore, no new matter has been introduced.

Applicant's have amended claim 92 to overcome the rejections under 35 U.S.C. § 112 in section 2b of the Office Action of claims 92, 94, 96, 98, 100 and 101. As noted by the Examiner, the Specification teaches splittable multi-component fibers and exploded fibers. Claim 92 has been amended to recite that the "the polymer fibers are exploded into micro-fibers entangling with one another" instead of reciting exploding fibers that are multi-component fibers and that are split. The wording of claim 92 is now consistent with the description in paragraphs [0036-0038] of the Specification dealing with exploded fibers. Therefore, no new matter has been entered by this amendment.

With regard to the rejection under 35 U.S.C. § 112 of claim 56 in section 3 of the Office Action, Applicant's have amended the claim to delete the notation "(5, 7, 11, 15)." Therefore, Applicants respectfully request that the rejection under 35 U.S.C. § 112 of claim 56 be withdrawn.

With regard to the rejection under 35 U.S.C. § 112 of claim 72 in section 4 of the Office Action, Applicants have amended claim 72 to be in independent form. Therefore, the rejection under 35 U.S.C. § 112 in the Office Action for insufficient antecedent basis is moot.

Applicants have amended claim 92 to overcome the rejection under 35 U.S.C. § 112 of claims 92, 94, 96, 98, 100 and 101 in section 5 of the Office Action. The Office Action rejected the claims for having insufficient antecedent basis for the limitation “multi-component polymer fibers split into mono-component micro-fibers” in lines 6-7 of claim 92. However, claim 92 as amended no longer contains this limitation as it has been amended to be consistent with the description of the exploded fiber embodiment in paragraphs [0036-0038] of the Specification. Therefore, there is no longer a lack of antecedent basis for limitations in the claims.

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejected claims 53, 54, 56, 59, 66, 68, 70, 72, 74, 76, 78, 80, 85 and 91-96 under 35 U.S.C. § 103(a) as being unpatentable over Gilmore et al (US 5,369,858) in view of Vonfeldt (US 6,739,023).

With respect to independent claims 53 and 91-92, the Office Action admits that Gilmore does not teach that the continuous filaments are splittable multi-component fibers and does not teach that the meltdown fibers are pulp. The Office Action states that Vonfeldt teaches a method forming a nonwoven composite fabric that includes pulp fibers and splittable multi-component fibers, and that it would have been obvious to substitute the bicomponent filaments and meltdown fibers of Gilmore with the splittable multi-component fibers and pulp fibers taught by Vonfeldt.

Gilmore discloses two embodiments, a first embodiment without a pre-bonding step (col. 7, lns. 26-50) and a second embodiment with a pre-bonding step (col. 10, lns. 25-52). However, Vonfeldt teaches that, when using splittable fibers, a pre-bonding step is essential. This pre-bonding step of Vonfeldt is a pretreatment step that is applied to the fibers before hydro-entanglement. At no point does Vonfeldt suggest removing this pretreatment step. Vonfeldt discusses pretreatment of thermal bond rolls to produce pin bonding, but also suggests that any form of pretreatment bonding which provides good tie down of the filaments could be used. *Vonfeldt*, col. 5, lns. 61-64. Vonfeldt additionally teaches that a pretreatment bonding step is necessary for a coherent end product. *Vonfeldt*, col. 9, lns. 24-26. Because Vonfeldt emphasizes the importance of a pretreatment step of bonding the fibers before hydro-entanglement, one of ordinary skill in the art would understand that when using the splittable multi-component fibers and pulp fibers of Vonfeldt in the process described in Gilmore, the second embodiment of

Gilmore which includes a pre-bonding step should be used. One of skill in the art would not recognize that the multi-component splittable fibers of Vonfeldt could be used in the first embodiment of Gilmore that does not include a pre-bonding step because Vonfeldt emphasizes that a pretreatment bonding step before hydro-entanglement is necessary for splittable fibers. When splittable fibers are used, Vonfeldt stresses the necessity of a pre-bonding step, and therefore one following the Gilmore process would understand that the second embodiment, which includes a pre-bonding step, would have to be followed. Therefore, the combination of Vonfeldt and Gilmore does not teach the claimed feature of hydro-entangling splittable multi-component fibers and pulp fibers to form a non-woven where the fibers have not been previously subjected to adhesion and/or pretreatment steps. Applicants respectfully request that the rejection of claims 53, 91, and 92 under 35 U.S.C. § 103(a) as being unpatentable over Gilmore in view of Vonfeldt be withdrawn.

With respect to 92, the Office Action states that splittable microfibers are equated with exploded fibers, and notes that the claim is a product by process claim. The Office Action noted that this rejection could be overcome by showing unobvious differences between the claimed product and the prior art product. As discussed above, Gilmore and Vonfeldt do not teach a non-woven made by hydro-entangling splittable multi-component fibers and pulp fibers where the fibers have not been previously subjected to adhesion and/or pretreatment steps. Therefore, the prior art does not teach the product made with splittable fibers. Because the Office Action stated that the exploded fibers are equated with the splittable fibers, and because the prior art does not teach the claimed product made with splittable fibers, Applicants respectfully request that the rejection of claim 92 and its dependent claims be withdrawn. Additionally, there are unobvious differences between the products described in claims 91 and 92 and the products of the prior art. In claims 91 and 92, the removal of any adhesion or pretreatment steps before hydro-entangling produces a structurally different product than the prior art products. Removing adhesion or pretreatment steps of the fibers before hydro-entanglement produces a softer, less rigid, and more cohesive non-woven product that is more appealing to customers when used for garments, to clean sensitive materials such as glasses, or for personal hygiene. In paragraphs [0007], [0009] and [0074], the Specification recognizes that prior art techniques using adhesion and/or pretreatment of the fibers create a product that has excessive rigidity and reduced softness. The process detailed in claims 91 and 92 for providing a non-woven by hydro-entangling layers

fibers that have not been previously subjected to adhesion and/or pretreatment steps creates a product with unobvious differences over the prior art. Applicants therefore respectfully request that the rejection of claims 91 and 92, and claims dependent therefore, be withdrawn.

Claims 54-59, 66, 68, 70, 76, 78, 80, 82, 85, 87, 89, and 93-101 depend from claims 53, 91, and 92, and are therefore allowable at least for the reasons given above.

The Office Action rejected claims 60, 61, 63, 64, 65, 67, 69, 71, 77, 79, 81 and 86 under 35 U.S.C. 103(a) as being unpatentable over Gilmore in view of Piotrowski (US 4,642,262). Applicants have amended claim 60 to include the limitation “wherein the fibers have not been previously subjected to adhesion and/or pretreatment steps.” Support for this limitation can be found at least in paragraphs [0009] and [0074] of the Specification as filed. Therefore, no new matter has been added.

With respect to claim 60, the Office Action stated that it would be obvious to substitute the spinning process of Gilmore with a Laval nozzle orifice as taught in Piotrowski in order to produce a fiber and resultant fabric that is cellulose-like. However, Piotrowski teaches that the nonwoven is made by simply allowing consolidating captured fibrils produced by the method on a sieve-like fabric. *Piotrowski*, col. 3, lns. 40-66. Because Piotrowski is teaching a finished nonwoven through a process that does not require any hydro-entangling, one of ordinary skill in the art would not combine the process of Piotrowski with the hydro-entangling process taught in Gilmore. The hydro-entangling in Gilmore is needed to create the nonwoven, and therefore subjecting the already completed nonwoven from Piotrowski to a hydro-entangling process would be seen as unnecessary by one of ordinary skill in the art. Because the hydro-entangling process of a continuous filament in Gilmore is directed at creating a nonwoven, one of ordinary skill in the art would not substitute the exploded fibrid process of Piotrowski, which produces a finished nonwoven, with the spinning process of Gilmore that requires the hydro-entangling to be complete.

Additionally, neither Gilmore nor Piotrowski teach a process of preparing a layer of exploded fibers and hydro-entangling the at least one layer to obtain a nonwoven where the fibers have not been previously subjected to adhesion and/or pretreatment steps. Applicants therefore respectfully request that the rejection of claim 60 under 35 U.S.C. 103(a) be withdrawn.

Claims 61-65, 67, 69, 71, 73, 75, 77, 79, 81, 83-84, 86, 88, and 90 depend from claim 60, and are therefore allowable at least for the reasons given above with respect to claim 60.

In addition, with respect to claims 73 and 75, Vonfeldt teaches that the hydro-entangling step occurs during the preparation of the layer, claim 73 requires “a pre-hydro-entangling step after said step of preparing” the fiber layer (emphasis added). Additionally, Vonfeldt is directed to a process for using pre-hydro-entanglement to create a splittable multi-component layer. In contrast, the process of claim 73 is directed to a process using exploded fibers in layer which do not require the hydro-entangling machine and process described in Vonfeldt to create the layer.

With respect to claim 72, the Office Action states that Vonfeldt “teaches the layer of splittable multi-component filaments is subjected to a hydro-entangling process in order to split the multi-component filaments prior to being hydro-entangled with the layer of pulp fibers (col. 6, lines 1-38).” However, Vonfeldt at col. 6 teaches that it is the continuous filament that is subjected to a hydraulic process to split the filament into the multi-component fibers. As seen in Fig. 1C of the present invention, which illustrates the process of claim 72, the pre-hydro-entangling step takes place after the layer of splittable multi-component fibers has already been prepared. Vonfeldt teaches that the fibers are split using the water jets, but does not disclose that pre-hydro-entangling occurs. Therefore, Vonfeldt does not teach the limitations of claim 72 and Applicants respectfully request that the rejections under 35 U.S.C. 103 of claim 72 and dependent claim 74 be withdrawn.

CONCLUSION

For all of the foregoing reasons, it is respectfully requested that the rejections set forth in the office action be withdrawn. All pending claims are allowable over the prior art of record, and the application is submitted to be in condition for allowance. Favorable reconsideration and a timely Notice of Allowance is respectfully requested.

In the event that an appropriate fee amount is not enclosed by check for any fees due in connection with the filing of this Response or requisite extensions of time, please charge any deficiencies or credit any overpayments to Deposit Account No. 50-1349.

In the event that the Examiner considers certain currently rejected claims to be allowable over the prior art and feels that an informal discussion would be helpful in progressing the current application toward allowance, the Examiner is invited to contact the undersigned by telephone.

Respectfully submitted,

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